REMARKS

This amendment is responsive to the Office Action dated May 5, 2004. Applicant has amended claims 38, 41, 47, and 52. Claims remain pending 1-58.

In the Office Action, the Examiner objected to Fig. 2 of the drawings for indefiniteness. In particular, the Examiner described the figure as indefinite because outputs 12 and 14 lack destination labels. However, Applicant submits that the destinations of outputs 12 and 14 in Fig. 2 would be clear to one of ordinary skill in the art in view of Fig. 1 and the corresponding specification. For example, Fig. 1 illustrates the destinations for these output signals and, more particularly, shows that interconnect 12 connects controller 6 to processor 4 and that interconnect 14 connects controller 6 to storage system 8. Fig. 2 illustrates an example embodiment of controller 6 from Fig. 1. Moreover, the specification of the present application explains in detail that "control unit 20 receives storage access commands from processor 4 via interconnect 12 and first interface 16. In addition, control unit 20 manages and accesses storage system 8 via interconnect 14 and second interface 18." Thus, one of ordinary skill in the art would understand from Fig. 1 and the specification that in Fig. 2, the destination of interconnect 12 is processor 4 and the destination of interconnect 14 is storage system 8. Applicant therefore respectfully requests that the objection to Fig. 2 be withdrawn.

The Examiner also objected to Fig. 5, elements 46 and 50; Fig. 8, element 77; Fig. 11, elements 92 and 104; and Fig. 13, element 122, for errors in text drafting. Corrected drawings for these figures are submitted herewith.

Claim Rejection Under 35 U.S.C. § 112

In the Office Action, the Examiner rejected claims 1-45, 47, 49-53, 55, 56 and 58 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-37, 49-51, 53, 55, 56 and 58

Applicant respectfully traverses the rejection with respect to claims 1-37, 49-51, 53, 55, 56 and 58, and submits that these claims particularly point out and distinctly claim the subject matter, as required by 35 U.S.C. 112, second paragraph.

In formulating the rejection, the Examiner described as unclear the following language from claim 1: "updating the VSM to reallocate the primary virtual storage to include data written to the secondary virtual storage," and the Examiner further stated that "it is unknown whether the 'reallocate' activity transfers the data to the primary virtual storage so as to include the data written to the secondary virtual storage or whether it copies the data."

Applicant submits that, in light of the present specification, it would be evident to one of ordinary skill in the art that the "reallocate" activity involves neither copying nor transferring the data. For example, paragraph 35 of the specification explains that:

> [C]ontroller 6 dynamically allocates and reallocates virtual storage 10. In particular, controller 6 *maintains a virtual storage map* (VSM) that *defines the allocation* of the primary and secondary virtual storage. . . . In response to a save (backup) command, controller 6 *updates the VSM*, dynamically reallocating primary virtual storage 10A to include the data written to secondary virtual storage 10B. Consequently, controller 6 dynamically reallocates secondary virtual storage 10B to exclude the data. . . . Specifically, by dynamically allocating and reallocating virtual storage 10 upon receiving the save command, *controller 6 avoids copying any of the actual data* in order to perform a backup (emphasis added).

This passage illustrates that the controller does not "copy" the data. Nor is it accurate to describe the controller as "transferring" the data. Rather, the "reallocate" activity refers to the controller updating, i.e., adjusting, the virtual storage map itself to dynamically allocate and reallocate virtual storage without require the stored data be copied or transferred. As described in the present specification, this virtual storage map defines the allocation of the primary and secondary virtual storage. The controller dynamically redefines this allocation by updating the virtual storage map. In other words, the controller re-maps the data such that any data mapped to the secondary virtual storage before the save command is then mapped to the primary virtual storage after the save command.

The following passage from paragraph 63 of the specification further shows that one of ordinary skill in the art would understand, based on the specification, that the "reallocation" occurs by virtue of the controller updating the virtual storage map, and not copying or transferring the data:

> Controller 6 then *modifies VSM 80C to reallocate primary virtual storage 10A and secondary virtual storage 10B.* In particular, controller 6 modifies the

corresponding binary elements of VSM 80C such that primary virtual storage 10A includes those storage units of secondary virtual storage 10B to which data has been written subsequent to time T_0 (emphasis added).

The discussion above also addresses the concerns expressed by the Examiner regarding the language "updating the VSM" and "adjusting the VSM to redefine the primary virtual storage to include," found, for example, in claims 1 and 16, respectively. Applicant therefore respectfully requests that the rejection of claims 1-37, 49-51, 53, 55, 56 and 58 be withdrawn.

Claims 1-37, 49-51, 53, 55, 56 and 58.

Applicant has amended claims 38, 41, 47, and 52 for purposes of clarification without narrowing the scope of these claims. Applicant submits that claims 38, 41, 47, and 52, as amended, particularly point out and distinctly claim the subject matter, as required by 35 U.S.C. 112, second paragraph.

Applicants are hopeful that the discussion above will aid the Examiner's understanding of the claimed invention. If the Examiner has any further questions, he is invited to contact the undersigned by telephone at his convenience.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date: By:

June 23, 2004   _Kent J. Sieffert_

SHUMAKER & SIEFFERT, P.A.   Name: Kent J. Sieffert
8425 Seasons Parkway, Suite 105   Reg. No.: 41,312
St. Paul, Minnesota 55125
Telephone: 651.735.1100
Facsimile: 651.735.1102